Flexible Solutions for Freight Facilities: San Joaquin Valley Zero and Near-Zero Emission Enabling Freight Project

Flexible Solutions for Freight Facilities is a BNSF Railway-led initiative to demonstrate zero and near-zero emission technologies in and around its yards. GE Transportation, now a Wabtec company, will design, manufacture and commission a single Battery Electric Locomotive (BEL) running from Stockton to Barstow in commercial operations. The BEL will reduce operating costs while simultaneously reducing criteria pollutant and greenhouse gas emissions.

In addition, zero and near-zero equipment will be demonstrated at the company's intermodal yards in Stockton and San Bernardino. The Stockton and San Bernardino facilities will each demonstrate a Mi-Jack hybrid-electric rubber-tire gantry (RTG) crane. The San Bernardino facility will also deploy a all-electric side loader and BYD's Class 8 drayage truck, which will be used for short-haul drayage operations in San Bernardino. The project also includes electrical upgrades and electric vehicle supply equipment (EVSE) to charge the zero and near-zero equipment and vehicles.

Dates: 03/01/2019 – Fall 2021
Grantee: San Joaquin Valley Air Pollution Control District
Partners: BNSF Railway, GE Transportation, BYD, MiJack, Southern California Edison, Pacific Gas & Electric, SH&H Inc., ITS ConGlobal, Southwest Research Institute, Café Coop

Grant Amount:

CARB Contribution:	$22,616,647
Matching Funds:	$22,620,673
Project Total:	$45,237,320

Vehicles/Equipment Funded

Equipment: This project funded five pieces of equipment/vehicles deployed at BNSF's Stockton and San Bernardino railyards including:

- One GE Transportation Battery Electric Locomotive (Stockton)
- Two Mi-Jack hybrid-electric rubber-tire gantry crane (Stockton, San Bernardino)
- One Taylor Machine Works, Inc. all-electric side loader (San Bernardino)
- One BYD all-electric Class 8 drayage truck (San Bernardino)

Infrastructure: This project provided for the accompanying electrical upgrades & EVSE equipment at Stockton and San Bernardino used for charging the equipment including:

- One wayside charger to recharge the BEL batteries (Stockton)
- One RTG EVSE (Stockton)
- EVSE for the Class 8 drayage truck and electric side loader (San Bernardino)

Lessons Learned

- During application development, partners found that zero and near-zero emission technology is available but needs further testing in real-world applications.
- Efficient data tracking, management, communication, and project administration will be essential to the success of this project.
- Adapting to the community's needs will ensure that the technologies are optimized for operations and will provide the greatest benefit.

Status Updates

- The project contract was executed between ARB and SJVAPCD in February 2019.
- SJVAPCD and the project partners have met consistently since announcement of award and are in the process of finalizing subcontracts.
- BNSF has continued work with vendors, utilities, and regulators to confirm project specifications, scope, and timeline.